

# Push Service SDK

Version: 1.1.0.16

Getting Started Guide





# Contents

1	About this guide.....	2
2	Overview.....	3
	Architecture: Push Service SDK solution.....	3
3	System requirements.....	6
	System requirements: Push Service SDK.....	6
	System requirements: Sample Push Initiator and the DebugPortal helper application.....	6
4	Preparing the push server.....	7
	Install and configure the JDK.....	7
5	Installing the BlackBerry Push Service SDK.....	8
	Push Service SDK setup applications.....	8
	Using the default settings in the setup application.....	8
	Prerequisites: Running the Push Service SDK setup application.....	8
	Run the Push Service SDK setup application.....	9
6	Verifying that the push server is configured correctly.....	10
	Verify the installation of Apache Tomcat in Windows.....	10
	Verify the installation of Apache Tomcat in Linux.....	10
	Verify the installation of the sample Push Initiator and helper applications.....	10
7	Configuring the push client.....	12
	Prerequisites: Installing the sample push-enabled application on a device.....	12
	Add a storage record for the sample push-enabled application to the system memory.....	12
	Install the sample push-enabled application on a device.....	12
	Configure the sample push-enabled application.....	13
	Configuration settings for the sample push-enabled application.....	14
8	Using the sample applications and the helper applications to submit messages.....	15
	Submit a push request message using the DebugPortal helper application.....	15
	Submit push request messages using the sample Push Initiator.....	15
9	Glossary.....	16
10	Provide feedback.....	17
11	Legal notice.....	18

# About this guide

1

This guide is for you if you are using the Push Service SDK for the first time. The goal of this guide is to help you install the SDK on the Windows® or Linux® operating systems and run the sample applications that are included with the SDK. This guide assumes that you want to use the push technology of the BlackBerry® Infrastructure and not the BlackBerry® Enterprise Server.

For more information about the SDK, including benefits, features, and process flows, see the *BlackBerry Push Service SDK Feature and Technical Overview*.

## Overview

2

You can use the Push Service SDK to develop a push solution that uses the push technology of the BlackBerry® Application Platform. The push solution includes a Push Initiator and a push-enabled application on a BlackBerry device. With push technology, the Push Initiator does not need to wait for a request from the push-enabled application to deliver content. The Push Initiator can deliver up to 8 KB of content (images, text, or audio) to many devices at once through the BlackBerry® Infrastructure (to the general public), through the BlackBerry® Enterprise Server (to enterprise users), or through both simultaneously. The content is available immediately to all users on their devices without waiting for downloads.

The Push Service SDK includes the sample Push Initiator and the DebugPortal helper application that you can run to submit a test push request message and receive the content using the sample push-enabled application on a BlackBerry device. This will help you to better understand how the Push Service SDK works and ensure that your system is correctly set up for developing applications using the SDK.

To use the Push Service SDK, you must perform the following actions:

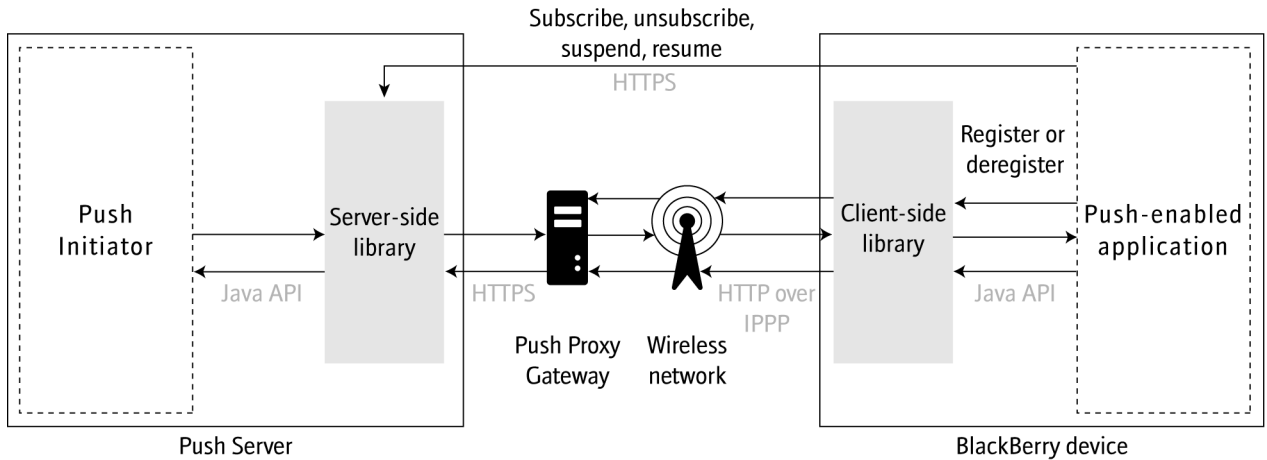
- Register with Research In Motion to use the Push Service. For more information about registering and to download the Push Service SDK, visit [www.blackberry.com/developers/pushservice](http://www.blackberry.com/developers/pushservice). When you register to use the Push Service, you receive a confirmation email message that contains information that you need to install the Push Service SDK.
- Install and configure the JDK 6.0 or later for your operating system.
- Install the Push Service SDK.

After you install the Push Service SDK, you can perform the following actions:

- Verify that the push server is installed and configured correctly.
- Install and configure the push client on a BlackBerry device.
- Use the sample Push Initiator or the DebugPortal helper application to submit push request messages for delivery to the sample push-enabled application on a BlackBerry device.

## Architecture: Push Service SDK solution

The architecture diagram shows a client/server solution that is developed using the Push Service SDK. The server-side library and the client-side library interact with other components to enable the delivery of server-initiated content to BlackBerry devices using push technology.



Component	Description
Push Initiator	The Push Initiator is the application that creates request messages (push request, cancel request, status-query request) and response messages (result-notification response) using the server-side library and submits them to the Push Proxy Gateway (PPG). Using the server-side library, the Push Initiator also processes subscription-related requests (subscribe, unsubscribe, suspend, resume) that it receives from the push-enabled application on the BlackBerry device.
Server-side library	The Push Service SDK contains the server-side library. The server-side library provides the APIs that the Push Initiator uses to facilitate all interactions with the PPG. The Push Initiator uses the server-side library to create push messages, status-query messages, and result-notification response messages in PAP XML format for delivery to the PPG. The Push Initiator uses the server-side library to process result-notification messages and status-query response messages that it receives from the PPG. The Push Initiator also uses the server-side library to process subscription-related requests, such as subscribe, unsubscribe, suspend, and resume requests, that it receives from the push-enabled application on the BlackBerry device.
Push Proxy Gateway (PPG)	The Push Proxy Gateway processes push request messages and status-query messages that it receives from the Push Initiator. Upon processing a push request message, the PPG sends a response message which communicates the overall outcome of the push message. The response message contains a result code or a PAP error code. The PPG can be the BlackBerry® Infrastructure or the BlackBerry® Enterprise Server.
Client-side library	The BlackBerry® Java® Development Environment 5.0 and later contains the client-side library. The client-side library provides the APIs that the push-enabled application uses to register or deregister with the PPG. The client-side library listens

Component	Description
	in the background for content received from the PPG. When content arrives from the PPG, the client-side library starts the push-enabled application if the application is not running.
Push-enabled application	The push-enabled application on the BlackBerry device sends subscription-related requests, such as subscribe, unsubscribe, suspend, and resume requests, to the Push Initiator. The push-enabled application uses the client-side library to register with the PPG and to listen for content, received from the PPG, in the background.

# System requirements

## System requirements: Push Service SDK

Item	Requirement
Hardware	<ul style="list-style-type: none"> <li>• 64 MB of free RAM</li> <li>• minimum of 8-bit color depth (256 colors)</li> <li>• minimum 640x480 screen resolution</li> </ul>
Operating system	<p>Any version of the following operating systems, as long as the operating system supports Java® 6 or later:</p> <ul style="list-style-type: none"> <li>• Windows® 7, Windows® XP, and Windows Server® 2003 (32-bit and 64-bit x86, Intel® Itanium® 2, and AMD-64)</li> <li>• Windows Server 2008 (32-bit and 64-bit)</li> <li>• Windows Vista® (32-bit and 64-bit x86)</li> <li>• Windows 2000 and Windows NT® (32-bit x86)</li> <li>• Red Hat® Enterprise Linux® 4 and 5 (x86, Intel Itanium 2, and AMD-64)</li> <li>• SUSE Linux 9, 10, and 11 (x86 and PowerPC)</li> <li>• Linux on zSeries</li> <li>• Other Linux operating systems (POSIX-compliant shell required)</li> </ul> <p><b>Note:</b> Beta and early access releases of these operating systems are not supported.</p>

## System requirements: Sample Push Initiator and the DebugPortal helper application

Component	Description
Push server	Computer with a Windows® or Linux® operating system
Development environment for Java	JDK® 6 or later for your operating system
Servlet container	JSP® servlet container (that implements the Java® Servlet Specification)
PPG	The BlackBerry® Infrastructure or the BlackBerry® Enterprise Server
Push client	BlackBerry device

# Preparing the push server

## Install and configure the JDK

1. Download the setup application for JDK® 6 or later for your operating system.
2. Run the JDK setup application and complete the instructions on the screen.
3. Set the JAVA\_HOME environment variable to the installation folder of the JDK.

# Installing the BlackBerry Push Service SDK

5

## Push Service SDK setup applications

The Push Service SDK comes with setup applications for the Windows® and Linux® operating systems. The setup application runs in graphical mode by default. If the setup application is unable to run in graphical mode, it switches to console mode.

Filename	Description
bpps-x.x.x.x.exe	Setup application for the Windows operating system, where the x.x.x.x in the file name corresponds to the Push Service SDK version
bpps-x.x.x.x.bin	Setup application for the Linux operating system, where the x.x.x.x in the file name corresponds to the Push Service SDK version

## Using the default settings in the setup application

You can use the default settings in the setup application to install the Push Service SDK. The setup application performs the following actions using the default settings:

- Installs and configures Apache Tomcat™ as the servlet container
- Extracts the distribution files containing the API, sample applications, helper applications, and configuration files
- Configures the Push Service SDK to use the BlackBerry® Infrastructure as the PPG
- Configures the Push Service SDK to store SDK data in system memory instead of a database
- Configures the sample Push Initiator for the Push Essentials service level at the PPG

## Prerequisites: Running the Push Service SDK setup application

Before you install the Push Service SDK using the setup application, perform the following actions:

- Apache Tomcat™ uses port number 8080 as the default HTTP port and port number 8443 as the default HTTPS port. If you want to use these default port numbers, verify that the ports are open for incoming requests on the server's firewall and are not already in use. If you want to use different port numbers, you can specify them when you run the setup application.
- To configure the sample Push Initiator during installation, obtain the following information from the confirmation email message that you received when you registered for the Push Service:
  - Application ID (App ID) for the Push Initiator
  - Password (Pwd) for the Push Initiator
  - Push Port for the push-enabled application

## Run the Push Service SDK setup application

1. Open the setup application for the Push Service SDK.
2. Accept the default options and complete the instructions on the setup application screens.
3. On the **Sample Push Initiator Settings** screen, type the following values from the confirmation email message that you received when you registered for the Push Service:
  - **ID** field: type the application ID (App ID) for the Push Initiator
  - **Public Password** field: type the password (Pwd) for the Push Initiator
  - **Device Port** field: type the Push Port for the push-enabled application
4. On the **Sample Push Initiator Settings** screen, accept the default options for the remaining selections.
5. Complete the instructions on the remaining screens to finish the installation.

# Verifying that the push server is configured correctly

Before you configure the push client and start delivering content to the sample push-enabled application, you can verify that your push server is configured correctly. To verify that your push server is configured correctly, you must make sure that your servlet container, sample Push Initiator, and helper applications were installed correctly.

## Verify the installation of Apache Tomcat in Windows

1. Verify that the value of the CATALINA\_HOME environment variable is the filepath for the installation folder for Apache Tomcat™ by performing the following actions:
  - a. Right-click **My Computer** and click **Properties**.
  - b. On the **Advanced** tab, click **Environment Variables**.
  - c. In the **System variables** section, for the **CATALINA\_HOME** variable, verify that the variable value is the filepath for the Apache Tomcat installation folder.
2. Navigate to the **bin** folder in the Apache Tomcat installation folder and double-click **startup.bat** to start Apache Tomcat.  
To stop Apache Tomcat, double-click **shutdown.bat**.
3. Navigate to the **logs** folder in the Apache Tomcat installation folder and verify that the log files do not contain any errors.

## Verify the installation of Apache Tomcat in Linux

1. Verify that the value of the CATALINA\_HOME environment variable is the filepath for the installation folder for Apache Tomcat™ by performing the following actions:
  - a. In the command prompt type **echo \$CATALINA\_HOME**.
  - b. Verify that the variable value is the filepath for the Apache Tomcat installation folder.
2. Navigate to the **bin** folder in the Apache Tomcat installation folder and run **startup.sh** to start Apache Tomcat.  
To stop Apache Tomcat, run **shutdown.sh**.
3. Navigate to the **logs** folder in the Apache Tomcat installation folder and verify that the log files do not contain any errors.

## Verify the installation of the sample Push Initiator and helper applications

### Before you begin:

Start Apache Tomcat™ by navigating to the **bin** folder in the Apache Tomcat installation folder and double-clicking either **startup.bat** or **startup.sh**.

**Note:** If the browser displays a message that there is a problem with the security certificate when you type one of the following URLs, click to continue to the web site.

1. To verify the installation of the sample Push Initiator, in the address field of a browser, type the following URLs:
  - a. Verify that accessing <https://localhost:8443/sample-push-initiator> displays a web interface for the Push Initiator.
  - b. Verify that accessing <https://localhost:8443/sample-push-initiator/subscribe> displays an rc=10002 error.
2. To verify the installation of the DebugPortal helper application, in the address field of a browser, type the following URLs:
  - a. Verify that accessing <https://localhost:8443/debug-portal> displays a web interface for the DebugPortal.
  - b. Verify that accessing <https://localhost:8443/debug-portal/subscribe> displays an rc=10002 error.
3. To verify the installation of the PushSDK helper application, in the address field of a browser, type the following URLs:
  - a. Verify that accessing <https://localhost:8443/pushsdk/subscribe> displays an rc=10002 error.
  - b. Verify that accessing <https://localhost:8443/pushsdk/notification> displays a message that the browser cannot display the page or cannot process the request.

## Configuring the push client

### Prerequisites: Installing the sample push-enabled application on a device

- Verify that the BlackBerry® device that you want to install the sample push-enabled application on is synchronized with the BlackBerry® Desktop Manager on the computer that you are using.
- Verify that the device that you want to install the sample push-enabled application on has the service books for the BlackBerry® Internet Service installed.
- If you plan to install the sample push-enabled application from a computer that is not the computer where you installed the Push Service SDK, copy the .cod and .alx files for the sample push-enabled application to the computer that you are using.
- Add a storage record for the sample push-enabled application to the system memory.

### Add a storage record for the sample push-enabled application to the system memory

Before you can send a push request message to the sample push-enabled application using the sample Push Initiator or the DebugPortal helper application, a storage record containing the attributes of the sample push-enabled application must exist in the system memory. The sample Push Initiator and the DebugPortal need to access this record. You can load the sample Push Initiator to automatically create the storage record in the system memory. The storage record contains the values that you typed for the push-enabled application when you installed the SDK.

#### Before you begin:

Start Apache Tomcat™ by navigating to the **bin** folder in the Apache Tomcat installation folder and double-clicking either **startup.bat** or **startup.sh**.

1. In the address field of a browser, type **https://localhost:8443/sample-push-initiator**.
2. Press **Enter**.

The web interface of the sample Push Initiator appears in the browser.

### Install the sample push-enabled application on a device

There are no samples available for BlackBerry devices running a version of the BlackBerry® Device Software earlier than 4.2.

When you install a sample push-enabled application on a device, you must choose the sample that is compatible with the version of the BlackBerry Device Software that is running on the device. You can find the .alx and .cod files of the samples in the folder for the sample push-enabled application, at the location where you installed the Push Service SDK.

#### Before you begin:

You need a computer with any version of BlackBerry® Desktop Manager 4.6 to 5.0.1 to complete this task.

1. Connect a device to a computer by using a USB cable.
2. Start the BlackBerry Desktop Manager.
3. If the device requires a password, specify the password and click **OK**.
4. In the BlackBerry Desktop Manager, click **Application Loader**.
5. In the **Add/Remove Applications** section, click **Start**.
6. Click **Browse**.
7. Navigate to the **sample-push-enabled-app** folder and perform one of the following actions:
  - If your device runs BlackBerry Device Software 5.0 or later, double-click the **SamplePushEnabledApp5\_0.alx** file.
  - If your device runs BlackBerry Device Software 4.6 or later but earlier than 5.0, double-click the **SamplePushEnabledApp4\_6.alx** file.
  - If your device runs BlackBerry Device Software 4.2 or later but earlier than 4.6, double-click the **SamplePushEnabledApp4\_2.alx** file.
8. Select the **Sample Push Enabled Application** check box. Click **Next** to complete the installation.

## Configure the sample push-enabled application

**Before you begin:** Install the sample push-enabled application on a BlackBerry® device.

1. On the Home screen of the device that you installed the sample push-enabled application on, click **Sample Push Enabled Application**.
2. Press the **Menu** key.
3. Click **Settings**.
4. Specify the configuration settings for the sample push-enabled application according to your Push Service SDK installation.
5. Press **Back** and save the changes.
6. Press the **Menu** key.
7. Click **Register**.
8. Type a user name and password of your choice. Click **OK**.

After a short delay to complete the registration process, the message "Request to register executed successfully" appears.

**Note:** Remember the user name that you specify in this step. You need to use it as an address when you submit a push request message using the DebugPortal helper application.

## Configuration settings for the sample push-enabled application

Setting	Description
Port	<ul style="list-style-type: none"> <li>Specifies the port number on the BlackBerry® device where content is received</li> <li>The value is contained in the confirmation email that you receive after you register for the Push Service.</li> </ul> <p><b>Note:</b> This port number is the same as the port number that you specify when you configure the sample Push Initiator using the Push Service SDK setup application.</p>
App ID	<ul style="list-style-type: none"> <li>Specifies the application ID for the push-enabled application</li> <li>The value is contained in the confirmation email that you receive after you register for the Push Service.</li> </ul> <p><b>Note:</b> This ID is the same as the sample push-enabled application ID that you specify when you configure the sample Push Initiator using the Push Service SDK setup application.</p>
BPS server URL	<ul style="list-style-type: none"> <li>Specifies an HTTP version of the PPG base URL that you receive after you register the push-enabled application with RIM (for example, if you receive a PPG base URL of <code>https://pushapi.eval.blackberry.com</code>, the BPS server URL is <code>http://pushapi.eval.blackberry.com</code>).</li> </ul>
Push Initiator application URL	<ul style="list-style-type: none"> <li>Specifies the URL for the server-side application (the sample Push Initiator or the DebugPortal helper application) that receives the subscription request from the device. For example, specify <code>https://&lt;push_server_host_name&gt;:8443/sample-push-initiator</code> to receive subscription requests with the sample Push Initiator, or <code>https://&lt;push_server_host_name&gt;:8443/debug-portal</code> to receive subscription requests with the DebugPortal, where <i>push_server_host_name</i> is the host name of the computer that hosts the sample Push Initiator or the DebugPortal.</li> </ul> <p><b>Note:</b> The URL must be accessible from the Internet.</p>
App Acknowledgement	<ul style="list-style-type: none"> <li>Specifies whether the push-enabled application supports application-level reliability</li> <li>This setting must match the setting that you specify when you configure the sample Push Initiator using the Push Service SDK setup application.</li> </ul> <p><b>Note:</b> When you use the setup application to configure the sample Push Initiator, the default value set by the setup application does not configure the sample Push Initiator to use application-level reliability.</p>

# Using the sample applications and the helper applications to submit messages

8

You can submit push request messages for testing purposes using either the sample Push Initiator or the DebugPortal helper application. If you use the sample Push Initiator, a unique text string for delivery through the push request message is submitted every 5 minutes until you terminate the operation or until 100 push request messages are submitted. You can change the settings that specify the total number of push request message submissions and the delay between the push request message submissions by editing the `sample-push-initiator.properties` file. If you use the DebugPortal helper application, you can type any text or attach a `.txt`, `.gif`, `.jpg`, `.jpeg`, `.png`, `.htm`, or an `.html` file to deliver to the sample push-enabled application, as long as it is not more than 8 KB in size.

## Submit a push request message using the DebugPortal helper application

**Note:** There is an 8 KB size limit for each individual push request message.

1. Browse to <https://localhost:8443/debug-portal> to access the main page of the DebugPortal helper application.
2. In the **Push Application** drop-down list, click the push-enabled application that you want to deliver content to.
3. In the **Addresses** field, specify the user name that you chose when you configured the push-enabled application.
4. Specify a file or type some text for delivery to the push-enabled application.
5. Click **Push**.

## Submit push request messages using the sample Push Initiator

1. Browse to <https://localhost:8443/sample-push-initiator> to access the main page of the sample Push Initiator.
2. Verify that the **Application Id** field contains the correct ID for your push-enabled application.
3. Click **Start General Push**.
4. To stop submitting push request messages, click **Stop**.

# Glossary

## **HTTP**

Hypertext Transfer Protocol

## **HTTPS**

Hypertext Transfer Protocol over Secure Sockets Layer

## **JDK**

Java® Development Kit

## **JSP**

JavaServer® Pages

## **PPG**

Push Proxy Gateway

## Provide feedback

10

To provide feedback, visit [www.blackberry.com/docsfeedback](http://www.blackberry.com/docsfeedback).

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